REMARKS

Page 1 of the specification has been amended to insert a patent number corresponding to an application previously identified by its serial number.

The non-elected claims 1-14 have been cancelled, and claims 19, 20, 23-26, 28 and 29 amended to correct minor clerical and drafting errors therein. Specifically, claims 19 and 20 have been amended so as to begin "A process" for consistency with claim 15 from which they depend, claims 23-25 have been amended to insert the word "effective" for consistency with claim 15, fourth paragraph, claim 26 has been amended to replace the phrase "comprises an average initial size" with the more natural "have an average initial size", and claims 28 and 29 have been amended to refer to percentages by volume of the electrophoretic medium, for consistency with claim 27, from which they depend.

It will readily be apparent that no new matter is introduced by any of the foregoing amendments.

In response to the restriction requirement set out on pages 2-3 of the Office Action, applicants hereby confirm the earlier election of Group II, claims 15-29; this election is now made without traverse. The non-elected claims 1-14 have been cancelled without prejudice to applicants' rights to file divisional and/or continuation applications directed to the subject matter of these claims. No change in inventorship is required as a result of this election.

Before commenting in detail on the various 35 USC 102 and 103 rejections set out in the Office Action, it is believed advisable to briefly set out the nature of this invention. As stated in the "Background of Invention" section of the specification, electrophoretic displays have been the subject of intense research and development for a number of years. Nevertheless, problems with the long-term image quality of these displays have prevented their widespread usage. For example, particles that make up electrophoretic displays tend to cluster and settle, resulting in inadequate service-life for these displays (Paragraph [0002]). Numerous patents/applications by the Massachusetts

Institute of Technology and E Ink Corporation have been published describing encapsulated electrophoretic media; such media comprise numerous small capsules, each of which itself comprises an internal phase containing electrophoretically-mobile particles suspended in a liquid suspension medium, and a capsule wall surrounding the internal phase. Typically, the capsules are themselves held within a polymeric binder to form a coherent layer positioned between two electrodes (Paragraph [0003]). However, many of these patents and applications recognize that the walls surrounding the discrete microcapsules in an encapsulated electrophoretic medium could be replaced by a continuous phase, thus producing a so-called "polymer-dispersed electrophoretic display" in which the electrophoretic medium comprises a plurality of discrete droplets of an electrophoretic fluid and a continuous phase of a polymeric material, and that the discrete droplets of electrophoretic fluid within such a polymer-dispersed electrophoretic display may be regarded as capsules or microcapsules even though no discrete capsule membrane is associated with each individual droplet. However, none of the aforementioned patents and applications describe an experimental preparation of such a polymer-dispersed electrophoretic display (Paragraph [0004]). This invention provides such a preparation. A liquid medium comprising a film-forming material is prepared and a plurality of droplets, each of which comprises a suspending fluid and at least one particle disposed within the suspending fluid and capable of moving through the fluid on application of an electric field. The resultant droplet-containing liquid medium is exposed to conditions which cause the film-forming material to form a film (i.e., to solidify or at least form a semi-solid which immobilizes the droplets), thus producing a two-phase electrophoretic medium in which the film-forming material forms a continuous phase surrounding and encapsulating the droplets, which form the discontinuous phase. The proportions of the liquid medium and the droplets are chosen so that the final discontinuous phase comprises at least about 40 percent by volume, preferably about 50 to about 80 percent by volume, and most desirably about 60 to about 70 percent by volume, of the electrophoretic medium. As discussed in Paragraph [0017] of the specification, these

preferred proportions of discontinuous phase are not merely design choices but have important effects on the performance of the electrophoretic medium. If the proportion of droplets is too high, the electrophoretic medium is mechanically weak and easily damaged, and droplets may leak from the medium upon rough handling. On the other hand, if excess continuous phase is used, the thickness of the medium needed to provide a given amount of droplets will be unnecessarily increased, so that either the applied field will be reduced (and the switching time of the display thereby increased) or the operating voltage must be increased, either of which is undesirable.

Claims 15-29 stand rejected under 35 USC 102 or alternatively under 35 USC 103(a) as unpatentable over Comiskey et al., U.S. Patent 6,120,839. This rejection is traversed. More specifically, this rejection is traversed on the grounds that Comiskey does not describe, or render obvious, a process in accordance any of the present claims and specifically does not disclose a process for forming a two-phase electrophoretic medium in which a film-forming material forms a continuous phase surrounding and encapsulating droplets, the discontinuous phase comprising at least about 40 percent by volume of the electrophoretic medium.

On pages 6-9 of the Office Action, the Examiner has provided a very lengthy and detailed analysis of Comiskey, and has specifically directed attention to the passages at column 4, lines 39-51, column 10, lines 32-50, column 15, line 41 to column 16, line 10, column 19, lines 49-68 and column 20, lines 22-25 and 55-65. However, it is respectfully submitted that this analysis does not clearly distinguish between two very different types of processes described in Comiskey. In the first type of process, to which by far the greater part of Comiskey's description and all three of Comiskey's Examples are devoted, droplets of electrophoretic fluid, comprising electrophoretic particles suspended in a suspending fluid, are dispersed in a second liquid, and a capsule wall is formed at the boundary between the two liquids, thus forming a plurality of discrete capsules (see especially column 24, lines 16-38 of Comiskey), which are typically separated from the external liquid, formed into a slurry with the addition of a polymeric

binder and coated to form the final electrophoretic medium (see especially column 24, line 39 to column 25, line 5 of Comiskey). The passages at column 20, lines 22-25 and 55-65, to which the Examiner directs attention, relate only to this type of process, as shown by the explicit references to "capsules" therein.

In the second type of process, which appears to be specifically discussed only at column 2, lines 19-29 and column 11, line 55 to column 12, line 2 of Comiskey, the electrophoretic fluid, comprising the electrophoretic particles and the suspending fluid, is directly dispersed or emulsified into a binder, with no intervening formation of discrete capsules to form a "polymer-dispersed electrophoretic display"; the Examiner is asked to note that Paragraph [0004] of the present application essentially reproduces column 2, lines 19-29 of Comiskey. There is no detailed explanation, nor any worked Example, in Comiskey as to the process by which such polymer-dispersed electrophoretic displays are produced.

The present invention relates only to the second type of process described in Comiskey. The two passages at column 2, lines 19-29 and column 11, line 55 to column 12, line 2 of Comiskey, which describe polymer-dispersed electrophoretic media, do not describe such media in which the discontinuous phase (the droplets) comprise at least about 40 percent by volume of the electrophoretic medium. Thus, Comiskey cannot anticipate any of the present claims. Also, these passages are devoid of any suggestion that the volume percentage of the two phases is a significant criterion in formulating an electrophoretic medium, and there appears to be no suggestion anywhere is Comiskey that the proportion of electrophoretic liquid is of significance in affecting the properties of the electrophoretic medium. In the absence of any such suggestion, Comiskey does not render any of the present claims obvious under 35 USC 103. *A fortiori,* Comiskey cannot render obvious any of claims 27-29 which imposes tighter limits on the volume percentages of the phases.

Claims 15-29 also stand rejected under 35 USC 102 and 103(a) as unpatentable over Albert et al., U.S. Patent 6,515,649. Although it may make little

practical difference (since as discussed below the relevant disclosure in Albert is essentially identical to that in Comiskey), for the record the undersigned attorney notes that use of Albert for purposes of a 35 USC 103(a) rejection is barred by 35 USC 103(c).

Albert was published only on February 4, 2003, after the February 28, 2002 filing date of the present application, and hence is available as prior art against the present application only under 35 USC 102(e). 35 USC 103(c) provides, in relevant part, that subject matter (such as Albert) which qualifies as prior art only under 35 USC 102(e) shall not preclude patentability where the subject matter and the claimed invention were, at time the invention was made, owned by the same person or subject to an obligation to the same person. Albert meets this test. Albert is, on its face, assigned to E Ink Corporation and Office records show that Application Serial No. 09/140,792, which issued as Albert, was assigned to E Ink by assignments recorded at Reel 9954, Frames 699-704, Reel 13674, Frames 14-21 and Reel 10029, Frames 78-81. Similarly, the present application was assigned to E Ink by an assignment recorded at Reel 12668, Frames 102-110. Furthermore, the undersigned attorney, who is the Intellectual Property Counsel of E Ink Corporation, hereby asserts, of his own personal knowledge, that in the cases of both Albert and the present application, all the inventors were under an obligation to assign their inventions to E Ink Corporation at the time the inventions were made. Accordingly, use of Albert in support of the 35 USC 103(a) rejection is barred by 35 USC 103(c).

The text of Albert is essentially identical to that of Comiskey. Accordingly, the 35 USC 102 and 103(a) rejections based on Albert are traversed for the same reasons as the corresponding rejections based on Comiskey.

Claims 15-29 also stand rejected under 35 USC 102(b) or 103(a) as anticipated by, or obvious over Micale, U.S. Patent No. 4,891,245. This rejection is traversed. More specifically, this rejection is traversed on the grounds that Micale does not produce a two-phase electrophoretic medium comprising a discontinuous phase (droplets), which itself comprises a suspending fluid and electrophoretic particles, and a

continuous phase (film) surrounding and encapsulating the droplets, as required by all the present claims.

Micale describes a process for producing an electrophoretic particle comprising a solid matrix surrounding a core of solid active ingredient (pigment). As stated in claim 1 of Micale, this particle is prepared by mixing together an organic solvent, a polymer and the active ingredient (pigment), dispersing the solvent/polymer/pigment mixture in water, removing from the resultant aqueous mixture substantially all of the organic solvent to form an aqueous suspension of polymer-coated pigment particles, and separating from this aqueous suspension a fraction of the polymer-coated pigment particles with a density substantially equivalent to the density of a given electrophoretic carrier fluid. The result of this process is a collection of discrete polymer-coated pigment particles; in such a collection there is no continuous phase, and the particles would be free to move (flow) relative to each other as in any other powder. The polymer-coated pigment particles may then be dispersed in a carrier (suspending) fluid and used in an electrophoretic display (see column 4, lines 26-32). There is no disclosure in Micale, or indeed the slightest suggestion therein, of forming any product in which a polymer surrounds an electrophoretic fluid comprising a mixture of pigment particles and suspending fluid. Hence, it is respectfully submitted, Micale is irrelevant to the patentability of the present claims.

For the foregoing reasons, the 35 USC 112 and 103 rejections are now longer justified and should be withdrawn.

Reconsideration and allowance of all claims now present is respectfully requested.

Since the normal period for responding to the Office Action expired June 24, 2004, there is filed herewith a Petition for a two month extension of this period.

Respectfully submitted

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